



Application Case Study

Batch Processing for Solids

The Application

Graphite electrodes are made by first mixing a compound of solids (primarily carbon black). This compound is then formed into the proper mold shape under heat and pressure. This mixture contains several different sizes and shapes of material. The primary component, carbon black, is a fluffy, extremely fine powder that generates a great deal of dust.

Each batch of the compound used is mixed within the distribution hopper. The hopper must be completely empty before mixing a new batch to ensure proper mixture ratios. The customer has tried other ultrasonic products and even radar to monitor the hopper level. The few instruments that actually worked were only reliable for a few days. The customer's solution was to continue shaking the hopper for several minutes and then manually check the level. This made their process very inefficient, as they lost time to extra shaking and had to have a technician visually check that the hopper was empty.



The Solution

The local SOR® rep presented this customer the information about the U71/BDP. He explained that with its high power and adaptive programming it is well suited to difficult conditions. This device is better able to adapt to changing conditions and track difficult processes than any other ultrasonic on the market. The high carbon content of the process also does not allow radar to work well – the dust gives too strong a return signal.

The U71/BDP has the power and flexibility to read difficult surfaces through problem atmospheres. Solids that are made up of different size particles do not provide a nice, consistent type of echo. A level device has to be able to adapt to the changing nature of the return signal. On top of this problem, there is a great deal of carbon black dust. Dust absorbs and scatters ultrasonic signals. Carbon dust has such a high dielectric that radar units tend to pick up on the dust and not the process. The U71/BDP constantly monitors the return signal and adapts to current conditions, it has the power to read through dust and ultrasonics are immune to the dielectric of any material.

The Results

The customer purchased the U71/BDP to test in this process. The device was installed and set for solids application and the high and low levels were programmed in. For the first week the unit worked fine – just like several other solutions they had tried. However, unlike the others, it continued to work the second week, and ever since then! The customer finally has control of his process! The U71/BDP has performed flawlessly and the customer no longer has to shake the hopper longer or visually verify it is empty. This has saved both time and money, allowing the whole operation to be more efficient.

Ordering Information

Electronics Model **U71-CL7J-00-30**
Integral 110VAC/24VDC Line-powered transmitter
2 x SPDT Relays adjustable over entire range
EP/NEMA 4 Integral electronics housing

Sensor Model **BDP-3A-00-0**
30 kHz Transducer for integral unit
3" NPT Threaded connection